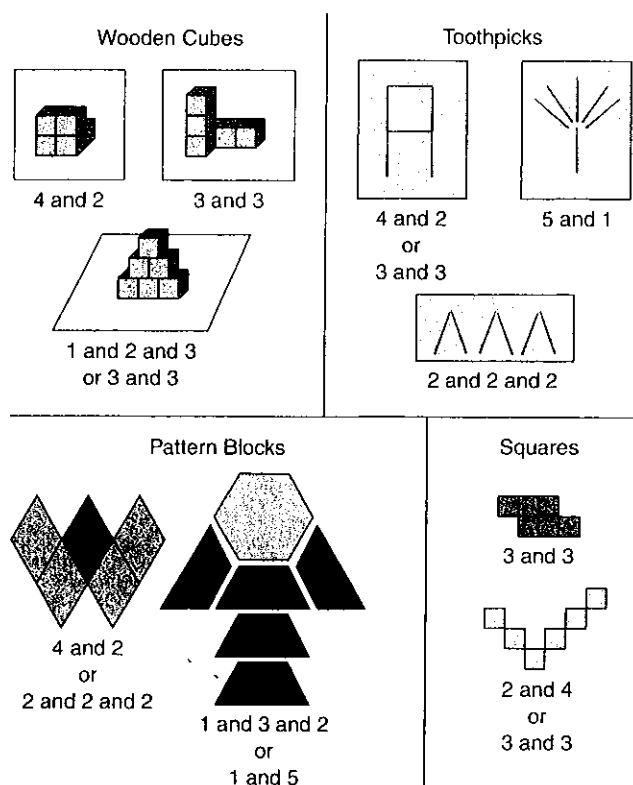


- Make arrangements of wooden cubes.
- Make designs with pattern blocks. It is a good idea to use only one or two shapes at a time.
- Make designs with flat toothpicks. These can be dipped in white glue and placed on small squares of construction paper to create a permanent record.
- Make designs with touching squares or triangles. Cut a large supply of small squares or triangles out of construction paper. These can also be pasted down.

For each design, have students write an addition equation that matches the way they see the parts within the design.

Writing the combinations encourages reflective thought focused on the part-whole relationship. It also helps make apparent the clear connection between part-whole concepts and addition concepts.

It is both fun and useful to challenge children to see their designs in different ways, producing different number combinations. In Figure 2.4, decide how children look at the designs to get the combinations listed under each.



**FIGURE 2.4** .....  
Designs for 6.

## Extending Number Relationships to Larger Numbers

Teachers can capitalize on some of the early number relationships on smaller numbers and extend them to numbers up to 100. A useful set of materials to help with these relationships is the little ten-frames found in the Blackline Masters. Each student should have a set of 10 tens and a set of frames for each number 1 to 9 with an extra 5.

The following three ideas are illustrated with the little ten-frames in Figure 2.5. First are the relationships of one more than and one less than. If you understand that one more than 6 is 7, then in a similar manner, ten more than 60 is 70 (that is, one more ten). The second idea is connected to fact strategies. If a student has learned to think about adding on to 8 or 9 by first adding up to 10 and then adding the rest, the extension to similar two-digit numbers is quite simple; see Figure 2.5(b). Finally, the most powerful idea for small numbers is thinking of them in parts. It is a very useful idea (though not one found in textbooks) to take apart larger numbers to begin to develop some flexibility in the same way. Students can begin by thinking of ways to take apart a multiple of 10 such as 80. Once they do it with tens, the challenge can be to think of ways to take apart 80 when one part has a 5 in it, such as 25 or 35.

Being able to recognize and generate equivalent representations of the same number is the part of number sense that will serve students well during tasks that require estimation, comparison, or computation. This ability increases students' flexibility in dealing with numbers because they can easily generate equivalent representations



**BLM 3, 4**

